

## CLAIMS

S<sub>1</sub>B  
A1

1. A Schottky barrier diode comprising:  
a substrate region of a first conductivity type formed in a  
semiconductor material layer of the same conductivity type;  
5 a metal layer; and  
at least two doped regions of a second conductive type formed in  
said semiconductor material layer, each one of said doped regions being  
disposed under said metal layer and being separated from the other doped  
region by portions of said semiconductor layer.

10 2. The Schottky barrier diode according to claim 1, in which said  
semiconductor material layer comprises a first resistivity value, and said  
doped regions each comprise a second resistivity value, wherein said  
second resistivity value is higher than said first resistivity value.

15 3. The Schottky barrier diode according to claim 1, in which said  
substrate comprises a doping value higher than a doping value of said  
semiconductor material layer.

4. The Schottky barrier diode according to claim 1, in which said  
doped regions further comprise respective body regions.

20 5. The Schottky barrier diode according to claim 1, in which said  
doped regions comprise doped regions that equalize the charge in said  
semiconductor material layer.

S<sub>2</sub>B  
A2

6. The Schottky barrier diode according to claim 1, in which said  
body regions comprise heavily doped body regions having the same  
conductivity type of said doped regions.

25 7. The Schottky barrier diode according to claim 1, in which said  
semiconductor material layer comprises a resistivity value lower than five  
Ohm-cm for a breakdown voltage higher than 200V.

8. The Schottky barrier diode according to claim 1, in which said doped regions comprise P-type doped regions.

9. The Schottky barrier diode according to claim 1, in which said semiconductor material layer comprises an N-type semiconductor material layer.

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